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**ID : 13723**

**PAPER : DS&Algorithms      FINAL TERM**

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P#1

Masood said

Q=1 sort the given List using Insertion Sort.

65, 70, 56, 51, 54, 66.

Ans:- 65, (70), 56, 51, 54, 66

$$n = 6$$

$$\text{Steps} = n - 1 = 6 - 1 = 5.$$

Step #1:- element = 70

65, (70), 56, 51, 54, 66

65, 70, 56, 51, 54, 66

Step #2:- element = 56

65, (70), (56), 51, 54, 66

(65), (56), 70, 51, 54, 66

56, 65, 70, 51, 54, 66

Step #3:- element = 51

56, 65, (70), (51), 54, 66

56, (65), (51), 70, 54, 66

(56), (51), 65, 70, 54, 66

51, 56, 65, 70, 54, 66.

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~~P# 2~~

Masood Said

Step # 4 :- Element = 54

51, 56, 65, ~~70~~, ~~54~~, 66

51, 56, ~~65~~, ~~54~~, 70, 66

51, ~~56~~, ~~54~~, 65, 70, 66.

51, 54, 56, 65, 70, 66.

Step # 5 :- Element = 66

51, 54, 56, 65, ~~70~~, ~~66~~

51, 54, 56, 65, 66, 70.

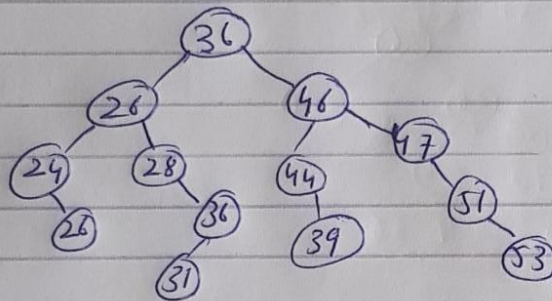
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P# 3

Q21- Construct Binary trees from given list of numbers and then verify the tree.

36, 26, 46, 28, 44, 47, 36, 24, 26, 51, 39, 53, 31

Ans ⇒



Verification:-

24, 26, 26, 28, 31, 36, 36, 39, 44, 46, 47, 51, 53

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P#4.

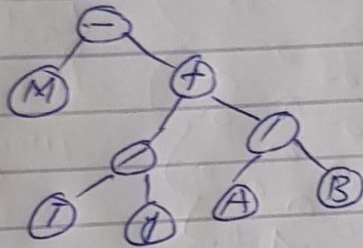
Q#3 Construct Binary Trees from given Mathematical Expressions.

i)  $M - T / Y + (A / B)$

ii)  $A * B + R ^ K$

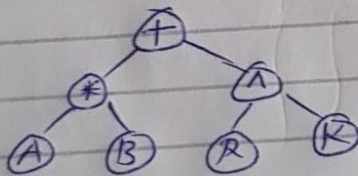
i)  $M - T / Y + (A / B)$

Ans



ii)  $A * B + R ^ K$

Ans



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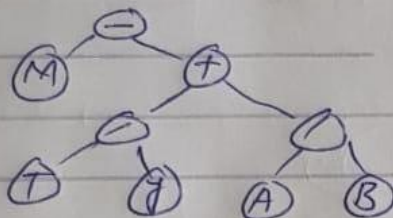
P# 5.

Q4 Apply Binary tree traversal techniques on Binary Tree constructed in Q3.

Ans

i)

$$\underline{M - T / y + (A / B)}$$



In order:-

$$M - T / y + A / B$$

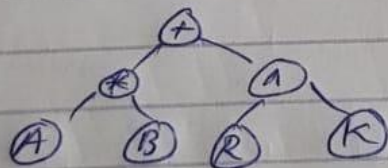
pre-order:-

$$- M + / T y / A B$$

post-order:-

$$M T y / A B / + -$$

(ii)  $A * B + R ^ K$



In-order :-  $A * B + R ^ K$ .

pre-order :-  $+ * A B ^ R K$

post-order :-  $A B * R K ^ +$ .

**THANK YOU**